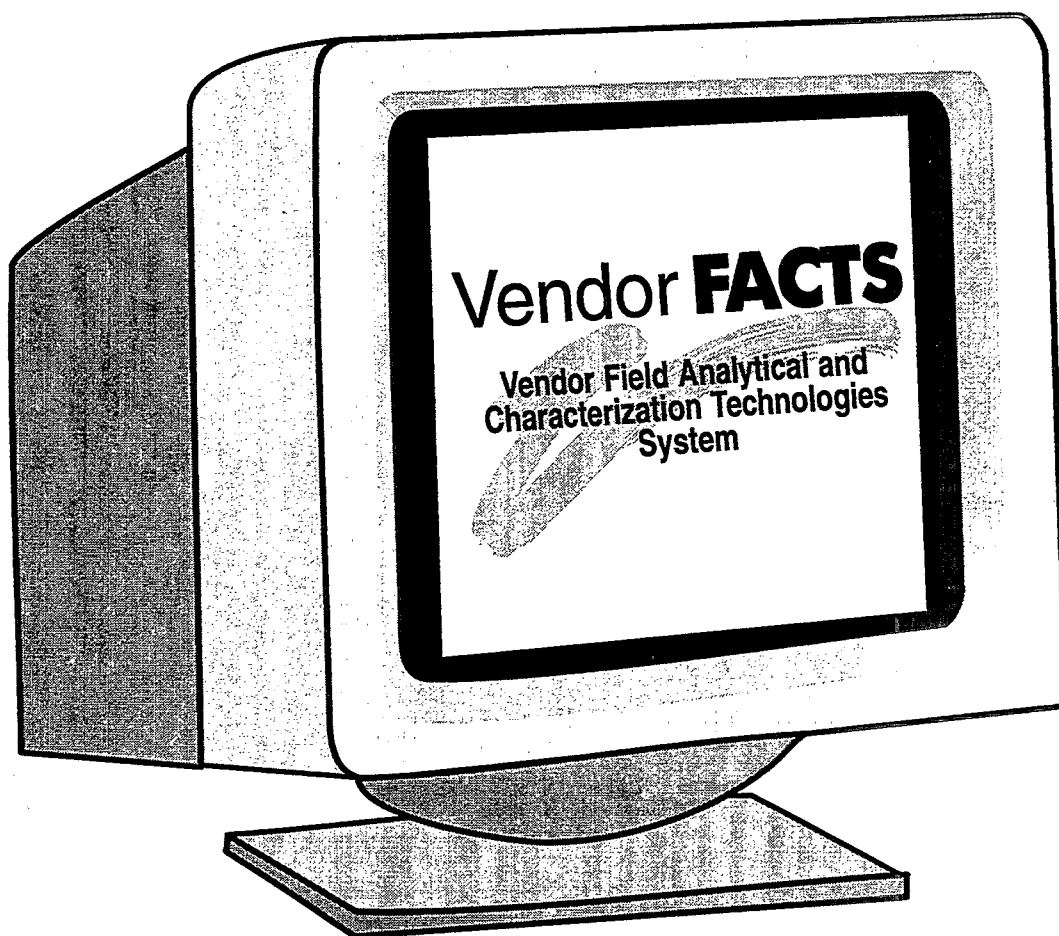




Vendor FACTS

Vendor Information Form

Version 3.0



NOTE: Instead of submitting this form, you may provide information on your technology(ies) electronically. The electronic VIF can be downloaded from the Vendor FACTS home page at www.prcemi.com/VFACTS. Or you may call the Vendor FACTS help line to request a 3.5" IBM-compatible diskettes.

Completion of this form is voluntary. Any questions, call the Vendor FACTS Help Line: 800/245-4505 or 703/287-8927.

Form Approved
OMB Control No. 2050-0114
Approval Expires 7/14/97

Internet Address (URL) • <http://www.epa.gov>

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GENERAL INFORMATION

I. What is Vendor FACTS?

The U.S. Environmental Protection Agency (EPA) is developing Version 3.0 of an automated database called the Vendor Field Analytical and Characterization Technologies System (Vendor FACTS) for use by professionals responsible for the cleanup of hazardous waste sites. Vendor FACTS contains information on field portable measurement and monitoring technologies. The system is updated annually. Version 2.0 was released in December 1996; Version 3.0 is scheduled for release in October 1997.

II. What Technologies are Eligible for Inclusion?

By this Vendor Information Form, EPA is inviting technology developers and vendors to submit information on specific categories of technologies for participation in the third version (Version 3.0) of Vendor FACTS. EPA has chosen these categories because it believes they are undergoing the greatest innovation at the present time, and they represent the greatest potential for streamlining the site assessment process. Technologies meeting the following criteria will be included in Vendor FACTS:

1. Fieldable technologies: portable or transportable equipment for on-site monitoring, screening, and analysis of hazardous substances. Stand alone modeling software used in the field to facilitate or expedite the site characterization process (i.e., site characterization modeling software) will also be included in the database.
2. Technologies that fall in one of the categories listed in Table 1 on the following page.

The following technologies are not eligible for inclusion in the database: Technologies for monitoring or characterizing industrial process waste streams; general purpose software to manipulate data as part of a site characterization technology listed in Table 1; radioactivity sensors, fixed-based (off-site) analytical equipment; remote sensors operated from aircraft or satellite platforms (e.g., multispectral scanners); and technologies that have minor improvement over established technologies. If you would like EPA to make a determination as to whether your technology or software fits the inclusion criteria, call the Vendor FACTS helpline at 1-800-245-4505.

Technologies of interest include those at any stage of development (e.g. mature, or pre-commercial); however, we prefer information on technologies that can be commercialized, rather than those used only in academic research. EPA may consider additional types of technologies in future versions depending on feedback from users. Please send a one page description of suggested new technologies to the address listed in Section VI.

Table 1
List of Targeted Monitoring Technologies

<u>Analytical</u>	<u>Geophysical</u>
Acoustic Wave Chemical Sensors	Physical Characterization
Air Measurement (Weather Measurement Technologies Excluded)	Ground Penetrating Radar
Analytical Detectors (Stand Alone Only)	Electromagnetic
Biosensors	Magnetrometry
Chemical Reaction-Based Indicators (Colormetric)	Seismic Reflection/Refraction
Electrochemical-based Detectors	Resistivity/Conductivity
Fiber Optic Chemical Sensors	
Chromatography	<u>Sampling or Sampler Emplacement</u>
Immunoassays	Air/Gas Sampling Technologies
Infrared Monitors	Bio-uptake Sampling
Spectroscopy	Multimedia Sampling (Ex: Wipe Sampling)
Mass Spectroscopy (may include GC/MS)	Surface Sampling
Soil Gas Analyzer Systems	Soil Sampling Technologies
X-Ray Fluorescence Analyzers	Product Sampling Technologies
	Water Sampling Technologies
<u>Extraction (chemical)</u>	
Analytical Traps	
Supercritical Fluid Extraction	
Solid Phase Extraction	
Thermal Desorption	

III. Why Should You Participate?

Vendor FACTS is an excellent opportunity for vendors to promote their capabilities. The system allows the vendor to provide substantial information on the applicability, cost, performance, and current use of their technologies. The database will be publicly available free-of-charge on the Internet as well as on computer diskette. We anticipate reaching cleanup personnel and investors throughout the U.S. and abroad by widely advertising Vendor FACTS in trade journals, at conferences, and through direct mailings to an extensive list of potential users.

IV. Should Confidential Business Information Be Submitted?

Confidential business information (CBI) should not be submitted, because EPA plans to make all submitted information available to the public. However, applicants may write

"available on a case-by-case basis" as their response to those questions for which they have information, but would prefer not to make this information generally available.

For confidential projects that otherwise could not be included, applicants are encouraged to provide "sanitized" or masked information that will allow users to review general information on a vendor's experience, without revealing confidential information. For instance, in Part 5, which details project experience, you may provide a generic industry name, such as "organic chemical manufacturer" instead of the actual site name.

V. How Much Documentation is Required Regarding Performance and Other Technology Claims?

Vendor FACTS is a service provided by EPA to showcase vendor's innovative technologies and capabilities. Therefore, it is in the applicant's best interest to fill out each part of VIF as completely as possible since incomplete information may discourage users from considering the technology further.

EPA will review each submittal for clarity, completeness, and adherence to instructions and may contact you to clarify information submitted. If the Agency makes any substantive changes to the submittal the respondent will be given the opportunity to review and comment, with one exception: EPA may list publicly-available information or references on Superfund sites or Federal facilities at which the vendor's technology has been used.

The Agency will not review submitted data for accuracy or quality; to do so would be too resource intensive and subjective, and would substantially delay dissemination of the database. Vendor FACTS will clearly state that vendors have supplied the information, and that the data have not been verified by the Agency. Applicants should expect that interested users may request additional information regarding applicability and performance of a particular monitoring or measurement technology. The database will contain the following disclaimer:

Inclusion in the U.S. Environmental Protection Agency's Vendor Field Analytical and Characterization Technologies System (Vendor FACTS) database does not mean that the Agency approves, recommends, licenses, certifies, or authorizes the use of any of the technologies. Nor does the Agency certify the accuracy of the data. This listing means only that the vendor has provided information on a technology that EPA considers to be eligible for inclusion in this database.

VI. When and Where to File

EPA will review *Vendor Information Forms* received by **July 30, 1997**, for inclusion in version 3.0 of Vendor FACTS in 1997. EPA will review responses received after July 30, only as time and resources permit.

Send completed VIFs and diskettes to:

System Operator, Vendor FACTS
PRC Environmental Management, Inc.
7932 Nieman Road
Lenexa, KS 66214

If you completed the VIF electronically (on a diskette), please attach a hard copy printout along with the diskette.

VII. Electronic Submittal of Vendor Information Form

Instead of submitting this form, you may provide information on your technology(ies) electronically. To do so, you can download an electronic version of the Vendor Information Form (VIF) from the Vendor FACTS pointer page at www.prcemi.com/vfacts or from the EPA's Cleanup Information (CLU-IN) web site at www.clu-in.com. You can also obtain the VIF by electronic mail (send request to cassidt@prcemi.com). The electronic VIF can be obtained on a 3.5" IBM-compatible diskette by calling the Vendor FACTS help line at (800) 245-4505. For electronic submittals, a diskette containing the completed VIF, along with a hard copy printout of the completed form, should be mailed to the address listed in Section VI above.

VIII. EPA's Authority for Submittal and Burden Statement

EPA's authority for conducting this *First Invitation for Submittals* is Section 311 of the Superfund Amendments and Reauthorization Act of 1986 (42 U.S.C. 9601 et seq.). Under Section 311, EPA may collect and disseminate information related to the use of innovative monitoring and measuring technologies for the detection of hazardous substances at hazardous waste sites.

EPA estimates that the vendor reporting burden for this collection of information will average 25 hours per respondent for one original submittal. This estimate includes the time applicants will require to review and maintain the data needed, and to complete and review the VIF. Send comments regarding this burden estimate, or any other aspect of reducing the burden, to Chief, Information Policy Branch, PM-223, U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460; and to Paperwork Reduction Project (OMB #2050-0114), Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503.

**VENDOR FIELD ANALYTICAL
AND CHARACTERIZATION TECHNOLOGIES SYSTEM
(VENDOR FACTS)
VENDOR INFORMATION FORM 3.0**

PART 1: GENERAL INFORMATION

Part 1 contains questions about general information on your company. Part 1 must be completed for a technology to be included in Vendor FACTS.

1.1 Date Submitted _____ / _____ / _____

1.2 Developer/Vendor Name _____

1.3 Street Address _____

1.4 City _____ State/Province _____ Zip Code _____

1.5 Country _____

1.6 a. Contact Name(s) _____

b. Contact Title(s) _____

1.7 Contact Phone () _____ - _____ ext. _____

1.8 Fax Number () _____ - _____

1.9 Internet/e-mail address _____

1.10 Home Page Address _____

Vendor FACTS 3.0 may include the capability to display the company logo for each vendor's technology. If possible, please include with your VIF submittal an electronic copy of your company logo in a Bitmap (BMP), Tag Image File (TIF), or PCX format.

PART 2: TECHNOLOGY OVERVIEW

Part 2 asks questions about the technology type, trade name, patent information, technology description, highlights, limitations, media monitored, monitoring targets as well as other general questions related to a vendor's technology. Part 2 must be completed for a technology to be included in Vendor Facts.

2.1 Technology Type. *Check one only.* Fill out a separate form for each additional technology.

Analytical

- ☐ Acoustic Wave Chemical Sensors
- ☐ Air Measurement (Weather Measurement Technologies Excluded)
- ☐ Analytical Detectors (Stand Alone Only)
- ☐ Biosensors
- ☐ Chemical Reaction-Based Indicators (Colormetric)
- ☐ Spectroscopy
- ☐ Fiber Optic Chemical Sensors
- ☐ Chromatography
- ☐ Immunoassays
- ☐ Infrared Monitors
- ☐ Mass Spectroscopy (may include GC/MS)
- ☐ Soil Gas Analyzer Systems
- ☐ X-Ray Fluorescence Analyzers
- ☐ Electrochemical-based Detectors

Extraction (chemical)

- ☐ Analytical Traps
- ☐ Supercritical Fluid Extraction
- ☐ Solid Phase Extraction
- ☐ Thermal Desorption

Geophysical

- ☐ Ground Penetrating Radar
- ☐ Electromagnetic
- ☐ Seismic Reflection/Refraction
- ☐ Resistivity/Conductivity
- ☐ Magnetrometry

Indicate the intended use of your geophysical technology.

- ☐ Surface
- ☐ Borehole
- ☐ Direct-push

Sampling or Sampler Emplacement

- ☐ Air/Gas Sampling Technologies
- ☐ Water Sampling Technologies
- ☐ Soil Sampling Technologies
- ☐ Product Sampling Technologies
- ☐ Multimedia Sampling
- ☐ Surface Sampling
- ☐ Bio-update Sampling

Other: _____

Vendor Facts 3.0 may include the capability to display a picture of your technology. If possible, please include with your VIF submittal a picture of your technology in a Bitmap (BMP), Tag Image File (TIF) or PCX electronic format.

2.2 Trade Name or Model Number Assigned By Vendor *(if different than name listed in Question 2.1).*

2.3 Equipment is (check one only)

- ☐ Portable ☐ Transportable

2.4 Registered trademark?

- ☐ Yes ☐ No

PART 2: TECHNOLOGY OVERVIEW

2.5 Vendor Services. Check all that apply.

- ☐ Equipment manufacturer
☐ Subcontractor for characterization, monitoring, or measurement
☐ Prime contractor for full-service characterization, monitoring, or measurement
☐ Technology sales
☐ Technology rentals or leases
☐ Other (specify) _____

2.6 Patents

- a. Is technology patented? ☐ Yes ☐ No Patent # _____
b. Is patent pending? ☐ Yes ☐ No

2.7 Technology Maturity. Check only one. Using the following definitions, indicate the operational status of the technology.

- a. ☐ **Mature.** Available equipment is sized and commercially available for actual monitoring or measurement.
b. ☐ **Pre-commercial.** Available equipment is of sufficient size to verify technology feasibility or establish the design and operating conditions for a commercially available system. However, it is not of the final size or design which will be marketed, however, the operating procedures and characteristics will not change upon final design for commercialization.
Expected date of availability of unit (month/year): _____

2.8 What is the intended use of your technology?

- ☐ Analytical measurement ☐ Health and Safety Monitoring
☐ Site Mapping ☐ Physical Characterization
☐ Leak/Leachate Detection ☐ Sample Collection
☐ Other: _____

2.9 Technology Evaluation, Verification, on Certification Programs. Is this technology being tested, or has this technology been tested in a technology evaluation, verification, or certification program such as EPA's SITE Monitoring and Measurement Technologies Program?

EPA SITE Program: ☐ Yes ☐ No

Consortium for Site Characterization Technology's (CSCT) verification Program: ☐ Yes ☐ No

Other: _____ ☐ Yes ☐ No

Name of project and contact: _____

Name of report and EPA document number: _____

Vendor Name _____
Technology Type _____

PART 2: TECHNOLOGY OVERVIEW (continued)

- 2.10 **Description of Technology.** In 300 words or less, describe the monitoring/measurement device or technology, including scientific principles on which the technology is based; whether full-scale system is continuous, on-demand, or single measurement; and whether the technology is transportable, portable, or in situ. Part 3 allows more detail for technology-specific information. Part 4 allows more detail for equipment capabilities and operation.

EXAMPLE

Description of Technology

ABC Corporation has developed an innovative detector for fluorescing analytes in water using fiber optics. This sensor, which exists as a detector on a cone penetrometer or as permanent monitor, uses a fiber optic bundle to transmit laser energy as well as to detect resultant fluorescence analytes such as pesticides. The returned spectra is automatically compared to a spectral library resident in a personal computer to distinguish the type of pesticide, etc.

When used as an in situ monitor, the fiber optic bundle is left in place in a small diameter screened PVC casing. At the surface, the end of the fiber optic bundle is protected in a small case mounted on the PVC, or other casing. Readings are made by attaching the fiber optic connector to the receptacle on a portable fluorimeter.

Vendor Name _____
Technology Type _____

PART 2: TECHNOLOGY OVERVIEW (continued)

- 2.11 **Technology Highlights.** In 200 words or less, describe the key marketable features of the technology in terms of parameters measured, performance, implementation, or cost. Include highlights such as monitoring niche and advantages over other technologies.

EXAMPLE

Technology Highlights

The SUPER sensor can operate in a wide range of subsurface conditions from 60% saturation in the vadose zone, to below the water table, and up to 200 ft. in depth. The measurable contaminant range is from under 10 ppb to pure product; while differentiation concentration ranges from 50 ppb through pure product. When used as a sensor on a cone penetrometer, continuous readings can be recorded at rates of 1 ft./min. and detection limits of 30 ppb. Full specification can be accomplished by stopping for no more than 20 seconds.

The SUPER sensor can identify and quantify PAH's, pesticides, and BTEX. Once system hardware and software are configured, there is virtually no cost for subsequent analyses. As a left-in-place monitor (which connects to portable instruments) each installation costs from \$50 - \$150. The use of a cone penetrometer eliminates the need for slow

Vendor Name _____
Technology Type _____

PART 2: TECHNOLOGY OVERVIEW (continued)

- 2.12 Technical Limitations.** In 200 words or less, describe the technical limitations, such as specific contaminants, site conditions, and waste preparation that could adversely affect applicability or performance.

EXAMPLE

Technology Limitations

The SUPER sensor relies on the ability of a target compound to fluorescence, which currently limits detection to those compounds mentioned. An additional problem can exist where two compounds have fluorescence spectra which are close to each other; in this case differentiation between the two may not be possible. Minor problems can exist in the presence of humic acids which cause interferences; however, this can be alleviated through preliminary chemical analysis and subsequent calibration. Due to transmission losses, the maximum length of the fiber bundle is limited to 200 feet when used as an in situ monitor. When used as a portable monitoring device where the fiber

Vendor Name _____
Technology Type _____

PART 2: TECHNOLOGY OVERVIEW (continued)

- 2.13 **Other Comments.** In 200 words or less, provide additional technology information, such as technology history, status, capabilities, experience, and applicable permits obtained (e.g., TSCA, RCRA).

EXAMPLE

Other Comments

The SUPER sensor has been successfully used in the monitoring mode on five hazardous waste sites and was shown to compare favorably with results of traditional analytical methods. As there currently exist cone penetrometer systems using fiber optics and sapphire windows (which are essentially the same as the SUPER system requirements), adaptation to a penetrometer system is not anticipated to degrade results. The SUPER cone penetrometer system is anticipated for fielding in May of 1997.

Vendor Name _____
 Technology Type _____

PART 2: TECHNOLOGY OVERVIEW (continued)

- 2.14 Media monitored or characterized.** Check "actual" for all media in which the technology for monitoring or measurement has been used. Check "potential" for all media to which the technology may be applied in the future.

Actual Potential

<input type="checkbox"/>	<input type="checkbox"/>	Soil (in situ)
<input type="checkbox"/>	<input type="checkbox"/>	Soil (ex situ)
<input type="checkbox"/>	<input type="checkbox"/>	Sludge (Does not include municipal sewage sludge.)
<input type="checkbox"/>	<input type="checkbox"/>	Solid (for example, slag)
<input type="checkbox"/>	<input type="checkbox"/>	Natural sediment (in situ)
<input type="checkbox"/>	<input type="checkbox"/>	Natural sediment (ex situ)
<input type="checkbox"/>	<input type="checkbox"/>	Soil Gas
<input type="checkbox"/>	<input type="checkbox"/>	Air particulates and aerosols
<input type="checkbox"/>	<input type="checkbox"/>	Air vapors
<input type="checkbox"/>	<input type="checkbox"/>	Leachate (in situ)
<input type="checkbox"/>	<input type="checkbox"/>	Surface Water (in situ)
<input type="checkbox"/>	<input type="checkbox"/>	Groundwater (in situ) [Includes measurement of ground water and/or saturated soil.]
<input type="checkbox"/>	<input type="checkbox"/>	Aqueous Sample (ex situ) (includes ex situ samples of groundwater or surface water, leachate, or waste water from a hazardous waste site)
<input type="checkbox"/>	<input type="checkbox"/>	Dense nonaqueous phase liquids (DNAPL) [in situ]
<input type="checkbox"/>	<input type="checkbox"/>	Light nonaqueous phase liquids (LNAPL) [in situ]
<input type="checkbox"/>	<input type="checkbox"/>	Multimedia
<input type="checkbox"/>	<input type="checkbox"/>	Other (specify) _____

Vendor Name _____
Technology Type _____

PART 2: TECHNOLOGY OVERVIEW (continued)

2.15 Monitoring Targets. Check all that may apply. Check "actual" for all that have been monitored or measured by your technology (i.e., data exist). Check "potential" for all that the technology may be applied to in the future. Data for actual contaminants monitored or measured should be included in *Part 5, Technology Performance*.

Chemical

Actual Potential

- | | | |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | Halogenated volatiles |
| <input type="checkbox"/> | <input type="checkbox"/> | Halogenated semivolatiles |
| <input type="checkbox"/> | <input type="checkbox"/> | Nonhalogenated volatiles |
| <input type="checkbox"/> | <input type="checkbox"/> | Nonhalogenated semivolatiles |
| <input type="checkbox"/> | <input type="checkbox"/> | Organic pesticides/herbicides |
| <input type="checkbox"/> | <input type="checkbox"/> | Dioxins/furans |
| <input type="checkbox"/> | <input type="checkbox"/> | PCBs |
| <input type="checkbox"/> | <input type="checkbox"/> | Polynuclear aromatic hydrocarbons (PAHs) |
| <input type="checkbox"/> | <input type="checkbox"/> | Solvents |
| <input type="checkbox"/> | <input type="checkbox"/> | Benzene-toluene-ethylbenzene-xylene (BTEX) |
| <input type="checkbox"/> | <input type="checkbox"/> | Acetonitrile (organic cyanide) |
| <input type="checkbox"/> | <input type="checkbox"/> | Organic corrosives |
| <input type="checkbox"/> | <input type="checkbox"/> | BOD/COD |
| <input type="checkbox"/> | <input type="checkbox"/> | Chemical/biological warfare agents |
| <input type="checkbox"/> | <input type="checkbox"/> | Gases |
| <input type="checkbox"/> | <input type="checkbox"/> | Total Petroleum Hydrocarbons (TPH) |

Actual Potential

- | | | |
|--------------------------|--------------------------|----------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Heavy metals |
| <input type="checkbox"/> | <input type="checkbox"/> | Nonmetallic toxic elements |
| <input type="checkbox"/> | <input type="checkbox"/> | Radioactive metals |
| <input type="checkbox"/> | <input type="checkbox"/> | Asbestos |
| <input type="checkbox"/> | <input type="checkbox"/> | Inorganic cyanides |
| <input type="checkbox"/> | <input type="checkbox"/> | Inorganic corrosives |

Miscellaneous

- | | | |
|--------------------------|--------------------------|--------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Explosives/propellants |
| <input type="checkbox"/> | <input type="checkbox"/> | Organometallic pesticides/herbicides |
| <input type="checkbox"/> | <input type="checkbox"/> | Other (specify) _____ |

Physical

Actual Potential

- | | | |
|--------------------------|--------------------------|----------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Water Table |
| <input type="checkbox"/> | <input type="checkbox"/> | Soil Types |
| <input type="checkbox"/> | <input type="checkbox"/> | Bedrock Stratigraphy |
| <input type="checkbox"/> | <input type="checkbox"/> | Resistivity |
| <input type="checkbox"/> | <input type="checkbox"/> | Conductivity |

Actual Potential

- | | | |
|--------------------------|--------------------------|------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Buried Ferrous Materials |
| <input type="checkbox"/> | <input type="checkbox"/> | Buried Non Ferrous Materials |
| <input type="checkbox"/> | <input type="checkbox"/> | Soil Moisture |
| <input type="checkbox"/> | <input type="checkbox"/> | Temperature |
| <input type="checkbox"/> | <input type="checkbox"/> | pH/Corrosivity |
| <input type="checkbox"/> | <input type="checkbox"/> | Other (specify) _____ |

Vendor Name _____
 Technology Type _____

PART 2: TECHNOLOGY OVERVIEW (continued)

2.16 Applicable Industrial Waste Sources or Site Types. *Check all that may apply.* Check "actual" for all waste sources or site types on which your technology has been or is currently capable of being used. Check "potential" for waste sources or all site types that the technology may be applied to in the future. See Table A for wastes typically associated with each industry.

Actual Potential

- | | | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Agriculture |
| <input type="checkbox"/> | <input type="checkbox"/> | Battery recycling/disposal |
| <input type="checkbox"/> | <input type="checkbox"/> | Chloro-alkali manufacturing |
| <input type="checkbox"/> | <input type="checkbox"/> | Coal gasification |
| <input type="checkbox"/> | <input type="checkbox"/> | Dry cleaning |
| <input type="checkbox"/> | <input type="checkbox"/> | Electroplating |
| <input type="checkbox"/> | <input type="checkbox"/> | Gasoline service station/petroleum storage facility |
| <input type="checkbox"/> | <input type="checkbox"/> | Herbicide manufacturing/use |
| <input type="checkbox"/> | <input type="checkbox"/> | Industrial landfills |
| <input type="checkbox"/> | <input type="checkbox"/> | Inorganic/organic pigments |
| <input type="checkbox"/> | <input type="checkbox"/> | Machine shops |
| <input type="checkbox"/> | <input type="checkbox"/> | Metal ore mining and smelting |
| <input type="checkbox"/> | <input type="checkbox"/> | Municipal landfill |

Actual Potential

- | | | |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | Munitions manufacturing |
| <input type="checkbox"/> | <input type="checkbox"/> | Paint/ink formulation |
| <input type="checkbox"/> | <input type="checkbox"/> | Pesticide manufacturing/use |
| <input type="checkbox"/> | <input type="checkbox"/> | Petroleum refining and reuse |
| <input type="checkbox"/> | <input type="checkbox"/> | Photographic products |
| <input type="checkbox"/> | <input type="checkbox"/> | Plastics manufacturing |
| <input type="checkbox"/> | <input type="checkbox"/> | Pulp and paper industry |
| <input type="checkbox"/> | <input type="checkbox"/> | Other organic chemical manufacturing |
| <input type="checkbox"/> | <input type="checkbox"/> | Other inorganic chemical manufacturing |
| <input type="checkbox"/> | <input type="checkbox"/> | Semiconductor manufacturing |
| <input type="checkbox"/> | <input type="checkbox"/> | Rubber manufacturing |
| <input type="checkbox"/> | <input type="checkbox"/> | Wood preserving |
| <input type="checkbox"/> | <input type="checkbox"/> | Uranium mining |
| <input type="checkbox"/> | <input type="checkbox"/> | Others (specify) _____ |

Vendor Name _____
 Technology Type _____

PART 2: TECHNOLOGY OVERVIEW (continued)

Table A
Contaminants/Wastes Associated With Industrial Waste
Sources or Types of Sites

1. Agriculture	: Pesticides
2. Battery recycling/disposal	: Lead (acid)
3. Chloro-alkali manufacturing	: Chlorine compounds, mercury
4. Coal gasification	: PAHs
5. Dry cleaning	: Solvents
6. Electroplating	: Chrome, metals
7. Herbicide manufacturing/use	: Pesticides
8. Industrial landfills	: Wastes from Multiple Sources
9. Inorganic/organic pigments	: Solvents, chrome, zinc
10. Machine shops	: Metals, oils
11. Metal ore mining and smelting	: Metals
12. Municipal landfills	: Wastes from multiple sources
13. Munitions manufacturing	: Explosives, lead
14. Paint/ink formulation	: Solvents, some metals (chrome, zinc)
15. Pesticide manufacturing/use	: Pesticides
16. Petroleum refining and reuse	: Petroleum, hydrocarbons, BTEX
17. Photographic products	: Silver, bromide, solvent
18. Plastics manufacturing	: Polymers, phthalates
19. Pulp and paper industry	: Chlorinated organics, dioxins
20. Other organic chemical manufacturing	: Organics, metals (used as catalyst)
21. Other inorganic chemical manufacturing	: Inorganics, metals
22. Semiconductor manufacturing	: Degreasing agents (solvents), metals
23. Rubber manufacturing	: Rubber, plastics, polymers, organics
24. Wood preserving	: Creosote, PCP, arsenic, chrome, PAHs
25. Uranium mining	: Uranium, radioactive metals

Vendor Name _____
Technology Type _____

PART 3: EQUIPMENT SPECIFICATIONS AND OPERATIONS

Part 3 asks questions related to the specific details of a vendor's technology. Part 3 must be completed for a technology to be included in Vendor Facts.

- 3.1 **Major Method Processes.** In 300 words or less, describe the standard operating procedures of your system, including a list of operating steps. Provide more detail than you did in Question 2.10.

EXAMPLE

Major Unit Processes

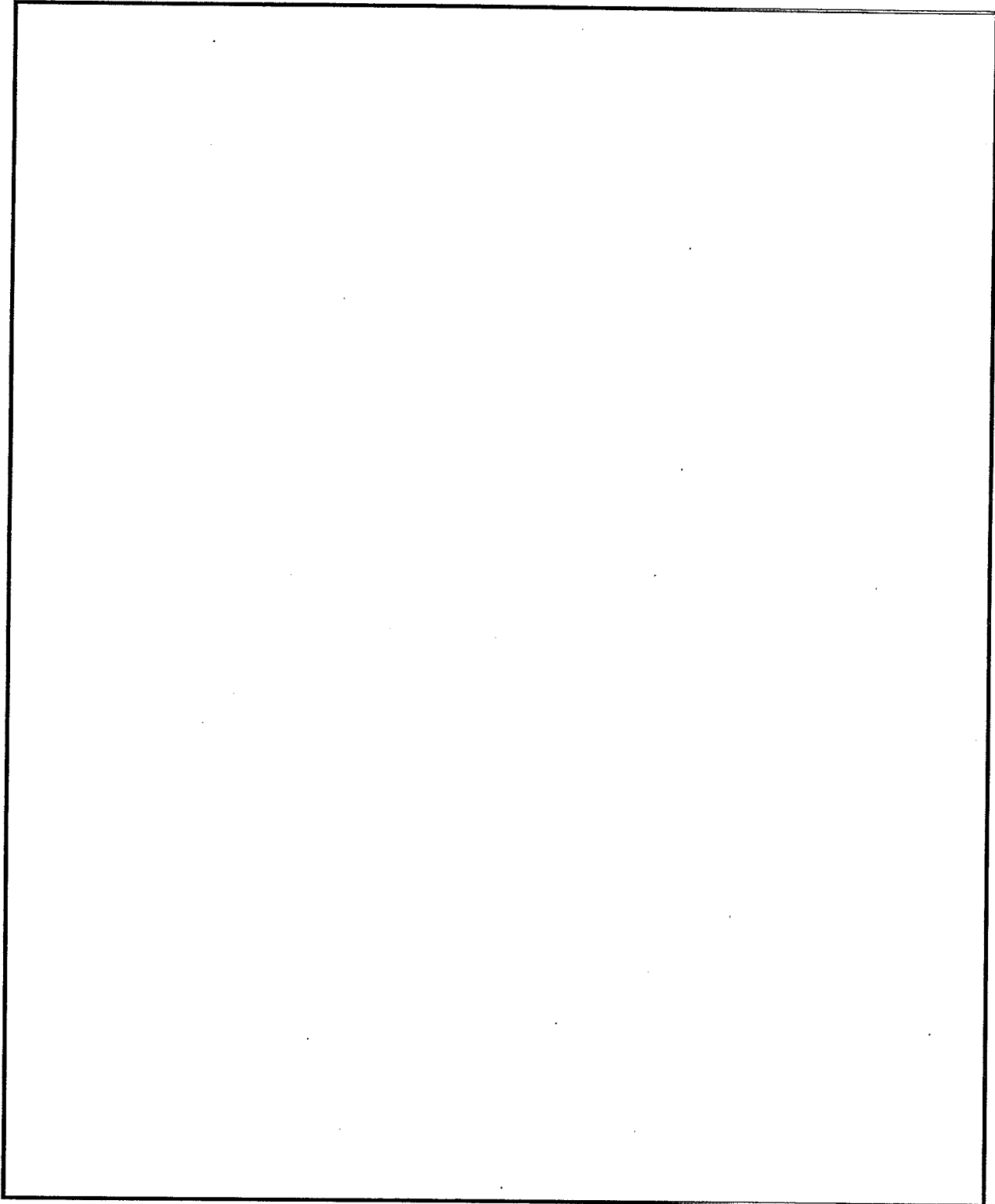
Full-scale equipment consists of a 20 ton truck in which are contained the hydraulics, penetrometer sections, controls, computers, spectrofluorimeter, and personnel. Penetrometer sections are standard 3 ft. by 1.75 in. diameter with the head tipped with a hardened steep tip. The cone section contains sensors for tip resistance and sliding friction as well as containing a sapphire window-protected sensor with an insulated fiber optic bundle leading to system equipment. This system is advanced hydraulically in three-foot increments to depths up to 300 ft. in unconsolidated material. The following are standard steps involved in using the device in full-scale operation:

1. Prior to use, site-specific soil samples and lab standards of known contaminant values are used to calibrate the SUPER system.
2. System integrity checks are performed.
3. The apparatus is assembled as the penetrometer is advanced through the bottom of the truck.
4. The penetrometer is steadily driven into the soil at a rate of 1 ft./min. while data is stored and processed by the computer. Data is simultaneously printed on a strip log. Tip and sliding resistance are simultaneously recorded and plotted.
5. Back filling with grout is performed during a second run using a grouting tip with grout emplaced from the bottom.

Vendor Name _____
Technology Type _____

PART 3: EQUIPMENT SPECIFICATIONS AND OPERATIONS (continued)

3.1 Major Method Processes (continued).

A large, empty rectangular box with a black border, occupying the majority of the page below the section header. It is intended for the user to provide details about the major method processes.

Vendor Name _____
Technology Type _____

PART 3: EQUIPMENT SPECIFICATIONS AND OPERATIONS (continued)

Physical Dimensions and Shipping Requirements

3.2 What components are included with your system? _____

Indicate the dimensions of the apparatus (how much space needed for each component)?

Component: _____ Height: _____ Width: _____ Length: _____ Weight: _____

Component: _____ Height: _____ Width: _____ Length: _____ Weight: _____

Component: _____ Height: _____ Width: _____ Length: _____ Weight: _____

Component: _____ Height: _____ Width: _____ Length: _____ Weight: _____

3.3 Indicate the shipping requirements of the technology.

☐ Standard Freight

☐ Dangerous Goods

☐ Hazardous Goods

3.4 If dangerous or hazardous goods is checked, please describe any special shipping requirements.

Power Requirements

3.5 Does your field analytical or characterization technology require one or more of the following power supplies (check all that apply):

☐ Batteries - type: _____

☐ Natural/LP gas

☐ AC 110 V

☐ AC 3 phase

☐ Other (specify) _____

☐ Power supply is not required

3.6 If your field analytical or characterization technology is battery-powered, how long can it continuously operate before recharging or new batteries are needed?

Vendor Name _____
Technology Type _____

PART 3: EQUIPMENT SPECIFICATIONS AND OPERATIONS (continued)

Operation of the field analytical or characterization technology

3.7 **Reagents/Supplies.** Does your field analytical or characterization technology require the use of reagents or supplies?

☐ Yes

☐ No

3.8 If yes, please describe the reagents or supplies required. _____

3.9 If yes, are they supplied with the instrument package, or must they be purchased separately?
What is their shelf life? _____

3.10 Are the reagents or supplies sensitive to environmental conditions (that is, are environmental controls such as refrigeration required)?

☐ Yes

☐ No

Calibration

3.11 Indicate the type and frequency of calibration required (check all that apply).

TYPE

FREQUENCY

☐ One-time, initial calibration is set at the factory

☐ Periodic, calibration is set at the factory _____

☐ Theoretical, based on literature _____

☐ Empirical, based on standards _____

☐ Site specific _____

☐ Other: _____

3.12 Does the instrument need to be calibrated for each specific contaminant that is analyzed?

☐ Yes

☐ No

Vendor Name _____
Technology Type _____

PART 3: EQUIPMENT SPECIFICATIONS AND OPERATIONS (continued)

Sample Preparation and Preservation

3.13 What sample preparation and preservation is required?

PHYSICAL

☐ Homogenation

☐ Sieving

☐ Grinding

☐ Cooling

☐ Other: _____

CHEMICAL

☐ Sorption (trapping)

☐ Chemical addition

☐ pH adjustment

☐ Other: _____

3.14 Is site preparation required?

☐ Yes

☐ No

3.15 If yes, please describe. _____

Maintenance

3.16 Is routine maintenance required?

☐ Yes

☐ No

Describe routine maintenance: _____

3.17 If yes, who performs routine maintenance?

☐ Vendor

☐ Operator

☐ Other: _____

Residual Wastes

3.18 Does your field analytical or characterization technology directly or indirectly produce any residual wastes (hazardous or nonhazardous)?

☐ Yes

☐ No

3.19 If yes, how are residual wastes that are produced by your field analytical or characterization technology managed? _____

Vendor Name _____
Technology Type _____

PART 3: EQUIPMENT SPECIFICATIONS AND OPERATIONS (continued)

3.20 Are disposal costs associated with the waste that is produced?

☐ Yes ☐ No ☐ Varies with local regulations

Health and Safety

3.21 What protective equipment or health and safety procedures are required to operate the technology? check all that apply

☐ Protective clothing, specify: _____

☐ Personal monitoring

☐ Waste storage

☐ Reagent storage

Other: _____

3.22 List any health and safety issues associated with the instrument. _____

Permit Requirements

3.23 Are users of the technology required to obtain any Federal or State permits, licenses, or certifications for transportation, operation, or ownership of the technology?

☐ Yes ☐ No

Type Required:

☐ Federal ☐ State ☐ Other

Please list the type of permit required:

Technical Support

3.24 Is special training required and/or provided?

☐ Yes, Training Required
☐ No, Training is Not Required, but is provided upon request
☐ No, Training is not required or provided

Vendor Name _____
Technology Type _____

PART 3: EQUIPMENT SPECIFICATIONS AND OPERATIONS (continued)

- 3.25 If yes, indicate the duration and cost of the training and whether it is conducted on site or off site.

☐ On site ☐ Off site ☐ Negotiable

Duration: _____ Duration: _____
Cost: _____ Cost: _____

- 3.26 Quality of technical support. If I am in the field and the instrument breaks down or is not giving quality results, what kind of response will I get?

☐ 24 hour hotline

☐ 24 hour answering service - please indicate average response time: _____

☐ Regular business hours - please list hours: _____

☐ Service contract

☐ Other: _____

Cost Information

- 3.27 a. Can your field analytical or characterization technology be purchased, leased, or rented?

☐ Purchased ☐ Leased ☐ Rented Other: _____

- b. If your field analytical or characterization technology can be purchased for individual use please indicate cost below.

Total unit cost \$ _____ unit

- c. If your field analytical or characterization technology can be rented or leased directly please indicate the rental or lease fee below.

\$ _____ hr \$ _____ day \$ _____ week \$ _____ month \$ _____ analysis

\$ _____ linear ft

Other costs: _____

If you do not lease the equipment directly, can you provide information on third party sources?

☐ Yes

☐ No

Vendor Name _____
Technology Type _____

PART 3: EQUIPMENT SPECIFICATIONS AND OPERATIONS (continued)

- d. Does the vendor supply everything necessary to use and obtain data with the rental or purchase of the technology?

☐ Yes

☐ No

- e. Please indicate other costs associated with your field analytical or characterization technology (for example, indicate the cost of reagents if they are required and were not included in the price above). Also indicate the cost of refills or routinely required replacement parts. _____

3.28 Factors Affecting Unit Price. Please indicate the factors that will have a significant effect on the unit price. Example factors include:

Initial contaminant concentration
Sample handling/preprocessing
Turbidity, airborne particulates
Depth to contamination
Depth to ground water
Interfering analytes, volatility

Site preparation
pH, Eh, moisture
Grain size, soil type
Access to power
Labor rates
Detection limit/resolution needed

PART 4: EQUIPMENT/CAPABILITIES AND PERFORMANCE

Part 4 allows you to describe the specific capabilities and operation of your equipment.

Operating conditions (temperature, moisture, etc.)

- 4.1 Check the matrix and environmental conditions that may affect or interfere with the performance of your field analytical or characterization technology.

Matrix

- | | |
|--|---|
| <input type="checkbox"/> Soil texture | <input type="checkbox"/> Consolidated or not |
| <input type="checkbox"/> Moisture | <input type="checkbox"/> Permafrost |
| <input type="checkbox"/> Saturated | <input type="checkbox"/> Percent Organic Matter |
| <input type="checkbox"/> Unsaturated (indicate range): _____ | <input type="checkbox"/> Other: |

Environmental Conditions

- ☐ Temperature (indicate range needed): _____
- ☐ Rain
- ☐ Daylight
- ☐ Humidity

- 4.2 Can the technology be operated successfully outside (i.e. a controlled environment is not necessary)?

- ☐ Yes ☐ No

Data Type and Interpretation

- 4.3 What type of data does your technology produce? (check all that apply)

- ☐ Qualitative (yes/no, absence or presence)
- ☐ Quantitative (specific number)
- ☐ Semi-quantitative (measurement within range)

- 4.4 What data manipulation is required and how long does it take to obtain useable results?

- ☐ None, the technology automatically produces useable data.

PART 4: EQUIPMENT/CAPABILITIES AND PERFORMANCE (continued)

- ☐ Some data manipulation is required to produce a data point.
- ☐ Data must be entered into a software program that calculates or produces useable data.

Describe the procedure and indicate time requirements: _____

- 4.5 Sample Throughput/Measurement Frequency.** Please indicate the sample throughput (that is, how long it takes to generate one useable data point). Throughput is measured by the total time required to obtain the data divided by the total number of data points.

Units

___ per hour ___ per day ___ per ft² ___ per linear foot ___ per acre ___ feet per day
___ continuous readout

☐ Other (specify) _____

Developmental or Bench-Scale Studies

- 4.6** Can you conduct developmental or bench-scale studies on some types of waste at your location?

☐ Yes ☐ No At a contaminated site? ☐ Yes ☐ No

- 4.7** Give the estimated range of quantity or size of target material needed to test the feasibility of this technology on a specific target material.

_____ to _____ (units)

- 4.8** Estimate total number of bench-scale studies conducted on actual target materials from different sources or sites. Count studies pertaining to the same site once, regardless of the number of different target materials.

PART 4: EQUIPMENT/CAPABILITIES AND PERFORMANCE (continued)

Precision and Accuracy

4.9 Specify the maximum measurement precision of the instrument.

Specify the maximum measurement of accuracy of the instrument.

If the performance of your technology is site-specific (that is, the quality of the results (data) it produces can vary from site to site) please complete question 5.1

If the performance of your technology is the same from site to site (that is, it can always achieve the same method detection limit on a contamination) please complete question 4.10.

COCs, MDL and operational range

4.10 Please indicate the method detection limits (MDL) and range of detection for contaminants of concern (COC) in each matrix analyzed?

<u>Contaminants of concern</u>	<u>Matrix</u>	<u>Method detection limit</u>	<u>Concentration Range</u>
--------------------------------	---------------	-------------------------------	----------------------------

Vendors should submit data on either contaminant groups or specific contaminants. Please provide a hard copy of this data that can be photocopied and included in the VIF. Please do not spend time typing or developing a contaminant data list.

Vendor Name _____
Technology Type _____

PART 5: REPRESENTATIVE APPLICATIONS, CLIENT REFERENCES, AND PERFORMANCE DATA

Part 5 asks questions about the performance of a vendor's technology. Part 5 is optional; however, EPA encourages vendors to complete as much of the questionnaire as possible.

Complete question 5.1 if the performance of your technology can vary from site to site (that is, it is site-specific).

5.1 List as many as *five* representative projects that also can serve as references. List information for only one project per sheet. For projects that have more than one application, fill out a separate sheet for each application. Provide only the performance data that is specific to each project listed. Commercial projects are of most importance. EPA reserves the right to add information on projects conducted for the federal government of which EPA is aware.

a.		
Site Name or Industry Type if Client Identity is Confidential: _____		
Site Type or Waste Source (Check all that apply)		
<input type="checkbox"/> Agriculture <input type="checkbox"/> Battery recycling/disposal <input type="checkbox"/> Chloro-alkali manufacturing <input type="checkbox"/> Coal gasification <input type="checkbox"/> Dry cleaning <input type="checkbox"/> Electroplating <input type="checkbox"/> Gasoline service station/petroleum storage facility <input type="checkbox"/> Herbicide manufacturing/use	<input type="checkbox"/> Industrial landfills <input type="checkbox"/> Inorganic/organic pigments <input type="checkbox"/> Machine shops <input type="checkbox"/> Metal ore mining and smelting <input type="checkbox"/> Municipal Landfill <input type="checkbox"/> Munitions Manufacturing <input type="checkbox"/> Paint/ink formulation <input type="checkbox"/> Pesticide manufacturing/use <input type="checkbox"/> Petroleum refining and reuse <input type="checkbox"/> Photographic products <input type="checkbox"/> Plastics manufacturing	<input type="checkbox"/> Pulp and paper industry <input type="checkbox"/> Other organic chemical manufacturing <input type="checkbox"/> Other inorganic chemical manufacturing <input type="checkbox"/> Semiconductor manufacturing <input type="checkbox"/> Rubber manufacturing <input type="checkbox"/> Wood preserving <input type="checkbox"/> Uranium mining <input type="checkbox"/> Others (specify) _____
Location		
City _____ State/Province: _____ Country _____	Application or Project Type (Check all that apply) <input type="checkbox"/> Full-Scale <input type="checkbox"/> Field Demonstration <input type="checkbox"/> Bench-Scale Study <input type="checkbox"/> TSCA National Demonstration <input type="checkbox"/> TSCA Research and Development <input type="checkbox"/> CSCT Verification Program <input type="checkbox"/> EPA SITE Characterization and Monitoring Program <input type="checkbox"/> Research <input type="checkbox"/> Other (specify): _____	
Regulation/Statute/Organization (Check all that apply)		
<input type="checkbox"/> RCRA Corrective Action <input type="checkbox"/> CERCLA <input type="checkbox"/> TSCA <input type="checkbox"/> Safe Drinking Water Act <input type="checkbox"/> UST Corrective Action <input type="checkbox"/> State (specify) _____ <input type="checkbox"/> DOD <input type="checkbox"/> DOE <input type="checkbox"/> Other (Specify) _____ <input type="checkbox"/> Not Applicable	Media (Check all that apply) <input type="checkbox"/> Soil (in situ) <input type="checkbox"/> Soil (ex situ) <input type="checkbox"/> Sludge <input type="checkbox"/> Solid <input type="checkbox"/> Natural sediment (in situ) <input type="checkbox"/> Natural sediment (ex situ) <input type="checkbox"/> Air particulates and aerosols <input type="checkbox"/> Leachate (in situ) <input type="checkbox"/> Other <input type="checkbox"/> Aqueous sample (ex situ) <input type="checkbox"/> Ground water (in situ) <input type="checkbox"/> Soil gas <input type="checkbox"/> Air vapors <input type="checkbox"/> Dense nonaqueous phase liquids (DNAPL) [in situ] <input type="checkbox"/> Light nonaqueous phase liquids (LNAPL) [in situ] <input type="checkbox"/> Surface water (in situ)	
Equipment Scale (Check one only)		
No. of Measurements per day _____ Total No. of Measurements _____	<input type="checkbox"/> Mature <input type="checkbox"/> Pre-commercial	Project Status <input type="checkbox"/> Ongoing <input type="checkbox"/> Completed Month _____ Year _____

Vendor Name _____

Technology Type _____

PART 5: REPRESENTATIVE APPLICATIONS, CLIENT REFERENCES, AND PERFORMANCE DATA
(continued)

a. (continued)

- Note:**
- (1) List one specific contaminant per line. Do not list such entire contaminant groups as VOCs or solvents. TPH, which can be analyzed using a specific test method, can be listed as an individual contaminant.
 - (2) Indicate the sample matrix. Refer to question 2.14.
 - (3) Indicate the method detection limit. Indicate a range if the MDL can vary.
 - (4) The concentration range is the range of concentrations over which the technology was capable of operating for this project.
 - (5) Include all related costs necessary to set up, read, record, and compute measurement.

[illegible]

PART 5: REPRESENTATIVE APPLICATIONS, CLIENT REFERENCES, AND PERFORMANCE DATA
(continued)

b.

Site Name or Industry Type if Client Identity is Confidential: _____		
Site Type or Waste Source (Check all that apply)		
<input type="checkbox"/> Agriculture <input type="checkbox"/> Battery recycling/disposal <input type="checkbox"/> Chloro-alkali manufacturing <input type="checkbox"/> Coal gasification <input type="checkbox"/> Dry cleaning <input type="checkbox"/> Electroplating <input type="checkbox"/> Gasoline service station/petroleum storage facility <input type="checkbox"/> Herbicide manufacturing/use	<input type="checkbox"/> Industrial landfills <input type="checkbox"/> Inorganic/organic pigments <input type="checkbox"/> Machine shops <input type="checkbox"/> Metal ore mining and smelting <input type="checkbox"/> Municipal Landfill <input type="checkbox"/> Munitions Manufacturing <input type="checkbox"/> Paint/ink formulation <input type="checkbox"/> Pesticide manufacturing/use <input type="checkbox"/> Petroleum refining and reuse <input type="checkbox"/> Photographic products <input type="checkbox"/> Plastics manufacturing	<input type="checkbox"/> Pulp and paper industry <input type="checkbox"/> Other organic chemical manufacturing <input type="checkbox"/> Other inorganic chemical manufacturing <input type="checkbox"/> Semiconductor manufacturing <input type="checkbox"/> Rubber manufacturing <input type="checkbox"/> Wood preserving <input type="checkbox"/> Uranium mining <input type="checkbox"/> Others (specify) _____
Location		
City _____ State/Province: _____ Country _____	Application or Project Type (Check all that apply)	
	<input type="checkbox"/> Full-Scale <input type="checkbox"/> Field Demonstration <input type="checkbox"/> Bench-Scale Study <input type="checkbox"/> TSCA National Demonstration <input type="checkbox"/> TSCA Research and Development <input type="checkbox"/> CSCT Verification Program <input type="checkbox"/> EPA SITE Characterization and Monitoring Program <input type="checkbox"/> Research <input type="checkbox"/> Other (specify): _____	
Regulation/Statute/Organization (Check all that apply)		
<input type="checkbox"/> RCRA Corrective Action <input type="checkbox"/> CERCLA <input type="checkbox"/> TSCA <input type="checkbox"/> Safe Drinking Water Act <input type="checkbox"/> UST Corrective Action <input type="checkbox"/> State (specify) _____ <input type="checkbox"/> DOD <input type="checkbox"/> DOE <input type="checkbox"/> Other (Specify) _____ <input type="checkbox"/> Not Applicable	Media (Check all that apply)	
	<input type="checkbox"/> Soil (in situ) <input type="checkbox"/> Soil (ex situ) <input type="checkbox"/> Sludge <input type="checkbox"/> Solid <input type="checkbox"/> Natural sediment (in situ) <input type="checkbox"/> Natural sediment (ex situ) <input type="checkbox"/> Air particulates and aerosols <input type="checkbox"/> Leachate (in situ) <input type="checkbox"/> Other	<input type="checkbox"/> Aqueous sample (ex situ) <input type="checkbox"/> Ground water (in situ) <input type="checkbox"/> Soil gas <input type="checkbox"/> Air vapors <input type="checkbox"/> Dense nonaqueous phase liquids (DNAPL) [in situ] <input type="checkbox"/> Light nonaqueous phase liquids (LNAPL) [in situ] <input type="checkbox"/> Surface water (in situ)
Equipment Scale (Check one only)		
No. of Measurements per day _____ Total No. of Measurements _____	<input type="checkbox"/> Mature <input type="checkbox"/> Pre-commercial	
	Project Status	
	<input type="checkbox"/> Ongoing <input type="checkbox"/> Completed	
	Month _____ Year _____	

Vendor Name _____

Technology Type _____

PART 5: REPRESENTATIVE APPLICATIONS, CLIENT REFERENCES, AND PERFORMANCE DATA
(continued)

b. (continued)

- Note:**
- (1) List one specific contaminant per line. Do not list such entire contaminant groups as VOCs or solvents. TPH, which can be analyzed using a specific test method, can be listed as an individual contaminant.
 - (2) Indicate the sample matrix. Refer to question 2.14.
 - (3) Indicate the method detection limit. Indicate a range if the MDL can vary.
 - (4) The concentration range is the range of concentrations over which the technology was capable of operating for this project.
 - (5) Include all related costs necessary to set up, read, record, and compute measurement.

Performance Data					
(1) Contaminant or Pollutant Parameter	(2) Matrix	(3) Method Detection Limits (Min. to Max.)	Units	(4) Concentration Range	Units
(Example) Benzene	Soil	25 - 50	ppm	10 - 100	ppm
Conditions or interference adversely affecting performance _____ _____ _____					
Cost Information (5)					
Estimated or actual total cost of using this technology for this project \$ _____ (total)		What items or activities are included in these cost(s) (e.g., mobilization, demobilization, excavation, waste handling)? _____ _____			
Person outside of company familiar with project (optional) Name _____ Company _____ Address _____ _____ Phone _____			Is Literature Available on this Project? (You may wish to include these citations in Part 6) Yes No		
Additional project information site conditions, mode of operation, derivation of accuracy and precision, and other pertinent information). _____ _____ _____ _____ _____					

PART 5: REPRESENTATIVE APPLICATIONS, CLIENT REFERENCES, AND PERFORMANCE DATA
(continued)

C.

Site Name or Industry Type if Client Identity is Confidential: _____		
Site Type or Waste Source (Check all that apply)		
<input type="checkbox"/> Agriculture <input type="checkbox"/> Battery recycling/disposal <input type="checkbox"/> Chloro-alkali manufacturing <input type="checkbox"/> Coal gasification <input type="checkbox"/> Dry cleaning <input type="checkbox"/> Electroplating <input type="checkbox"/> Gasoline service station/petroleum storage facility <input type="checkbox"/> Herbicide manufacturing/use	<input type="checkbox"/> Industrial landfills <input type="checkbox"/> Inorganic/organic pigments <input type="checkbox"/> Machine shops <input type="checkbox"/> Metal ore mining and smelting <input type="checkbox"/> Municipal Landfill <input type="checkbox"/> Munitions Manufacturing <input type="checkbox"/> Paint/ink formulation <input type="checkbox"/> Pesticide manufacturing/use <input type="checkbox"/> Petroleum refining and reuse <input type="checkbox"/> Photographic products <input type="checkbox"/> Plastics manufacturing	<input type="checkbox"/> Pulp and paper industry <input type="checkbox"/> Other organic chemical manufacturing <input type="checkbox"/> Other inorganic chemical manufacturing <input type="checkbox"/> Semiconductor manufacturing <input type="checkbox"/> Rubber manufacturing <input type="checkbox"/> Wood preserving <input type="checkbox"/> Uranium mining <input type="checkbox"/> Others (specify) _____
Location		
City _____ State/Province: _____ Country _____	Application or Project Type (Check all that apply) <input type="checkbox"/> Full-Scale <input type="checkbox"/> Field Demonstration <input type="checkbox"/> Bench-Scale Study <input type="checkbox"/> TSCA National Demonstration <input type="checkbox"/> TSCA Research and Development <input type="checkbox"/> CSCT Verification Program <input type="checkbox"/> EPA SITE Characterization and Monitoring Program	
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Equipment Scale (Check one only)		
No. of Measurements per day _____ Total No. of Measurements _____	<input type="checkbox"/> Mature <input type="checkbox"/> Pre-commercial	Project Status <input type="checkbox"/> Ongoing <input type="checkbox"/> Completed Month _____ Year _____

Vendor Name _____

Technology Type _____

PART 5: REPRESENTATIVE APPLICATIONS, CLIENT REFERENCES, AND PERFORMANCE DATA
(continued)

c. (continued)

- Note:**
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[illegible]

PART 5: REPRESENTATIVE APPLICATIONS, CLIENT REFERENCES, AND PERFORMANCE DATA
(continued)

d.

Site Name or Industry Type if Client Identity is Confidential: _____		
Site Type or Waste Source (Check all that apply)		
<input type="checkbox"/> Agriculture <input type="checkbox"/> Battery recycling/disposal <input type="checkbox"/> Chloro-alkali manufacturing <input type="checkbox"/> Coal gasification <input type="checkbox"/> Dry cleaning <input type="checkbox"/> Electroplating <input type="checkbox"/> Gasoline service station/petroleum storage facility <input type="checkbox"/> Herbicide manufacturing/use	<input type="checkbox"/> Industrial landfills <input type="checkbox"/> Inorganic/organic pigments <input type="checkbox"/> Machine shops <input type="checkbox"/> Metal ore mining and smelting <input type="checkbox"/> Municipal Landfill <input type="checkbox"/> Munitions Manufacturing <input type="checkbox"/> Paint/ink formulation <input type="checkbox"/> Pesticide manufacturing/use <input type="checkbox"/> Petroleum refining and reuse <input type="checkbox"/> Photographic products <input type="checkbox"/> Plastics manufacturing	<input type="checkbox"/> Pulp and paper industry <input type="checkbox"/> Other organic chemical manufacturing <input type="checkbox"/> Other inorganic chemical manufacturing <input type="checkbox"/> Semiconductor manufacturing <input type="checkbox"/> Rubber manufacturing <input type="checkbox"/> Wood preserving <input type="checkbox"/> Uranium mining <input type="checkbox"/> Others (specify) _____
Location		
City _____ State/Province: _____ Country _____	Application or Project Type (Check all that apply) <input type="checkbox"/> Full-Scale <input type="checkbox"/> Field Demonstration <input type="checkbox"/> Bench-Scale Study <input type="checkbox"/> TSCA National Demonstration <input type="checkbox"/> TSCA Research and Development <input type="checkbox"/> CSCT Verification Program <input type="checkbox"/> EPA SITE Characterization and Monitoring Program	
Media (Check all that apply)		
Regulation/Statute/Organization (Check all that apply) <input type="checkbox"/> RCRA Corrective Action <input type="checkbox"/> CERCLA <input type="checkbox"/> TSCA <input type="checkbox"/> Safe Drinking Water Act <input type="checkbox"/> UST Corrective Action <input type="checkbox"/> State (specify) _____ <input type="checkbox"/> DOD <input type="checkbox"/> DOE <input type="checkbox"/> Other (Specify) _____ <input type="checkbox"/> Not Applicable	<input type="checkbox"/> Soil (in situ) <input type="checkbox"/> Soil (ex situ) <input type="checkbox"/> Sludge <input type="checkbox"/> Solid <input type="checkbox"/> Natural sediment (in situ) <input type="checkbox"/> Natural sediment (ex situ) <input type="checkbox"/> Air particulates and aerosols <input type="checkbox"/> Leachate (in situ) <input type="checkbox"/> Other	<input type="checkbox"/> Aqueous sample (ex situ) <input type="checkbox"/> Ground water (in situ) <input type="checkbox"/> Soil gas <input type="checkbox"/> Air vapors <input type="checkbox"/> Dense nonaqueous phase liquids (DNAPL) [in situ] <input type="checkbox"/> Light nonaqueous phase liquids (LNAPL) [in situ] <input type="checkbox"/> Surface water (in situ)
Equipment Scale (Check one only)		
No. of Measurements per day _____ Total No. of Measurements _____	<input type="checkbox"/> Mature <input type="checkbox"/> Pre-commercial	Project Status <input type="checkbox"/> Ongoing <input type="checkbox"/> Completed Month _____ Year _____

Vendor Name _____

Technology Type _____

PART 5: REPRESENTATIVE APPLICATIONS, CLIENT REFERENCES, AND PERFORMANCE DATA
(continued)

d. (continued)

- Note:**
- (1) List one specific contaminant per line. Do not list such entire contaminant groups as VOCs or solvents. TPH, which can be analyzed using a specific test method, can be listed as an individual contaminant.
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 - (5) Include all related costs necessary to set up, read, record, and compute measurement.

Performance Data					
(1) Contaminant or Pollutant Parameter	(2) Matrix	(3) Method Detection Limits (Min. to Max.)	Units	(4) Concentration Range	Units
(Example) Benzene	Soil	25 - 50	ppm	10 - 100	ppm
Conditions or interference adversely affecting performance _____ _____					
Cost Information (5)					
Estimated or actual total cost of using this technology for this project \$ _____ (total)		What items or activities are included in these cost(s) (e.g., mobilization, demobilization, excavation, waste handling)? _____ _____			
Person outside of company familiar with project (optional) Name _____ Company _____ Address _____ Phone _____			Is Literature Available on this Project? (You may wish to include these citations in Part 6) Yes No		
Additional project information site conditions, mode of operation, derivation of accuracy and precision, and other pertinent information). _____ _____ _____ _____ _____					

PART 5: REPRESENTATIVE APPLICATIONS, CLIENT REFERENCES, AND PERFORMANCE DATA
(continued)

e.

Site Name or Industry Type if Client Identity is Confidential: _____		
Site Type or Waste Source (Check all that apply)		
<input type="checkbox"/> Agriculture <input type="checkbox"/> Battery recycling/disposal <input type="checkbox"/> Chloro-alkali manufacturing <input type="checkbox"/> Coal gasification <input type="checkbox"/> Dry cleaning <input type="checkbox"/> Electroplating <input type="checkbox"/> Gasoline service station/petroleum storage facility <input type="checkbox"/> Herbicide manufacturing/use	<input type="checkbox"/> Industrial landfills <input type="checkbox"/> Inorganic/organic pigments <input type="checkbox"/> Machine shops <input type="checkbox"/> Metal ore mining and smelting <input type="checkbox"/> Municipal Landfill <input type="checkbox"/> Munitions Manufacturing <input type="checkbox"/> Paint/ink formulation <input type="checkbox"/> Pesticide manufacturing/use <input type="checkbox"/> Petroleum refining and reuse <input type="checkbox"/> Photographic products <input type="checkbox"/> Plastics manufacturing	<input type="checkbox"/> Pulp and paper industry <input type="checkbox"/> Other organic chemical manufacturing <input type="checkbox"/> Other inorganic chemical manufacturing <input type="checkbox"/> Semiconductor manufacturing <input type="checkbox"/> Rubber manufacturing <input type="checkbox"/> Wood preserving <input type="checkbox"/> Uranium mining <input type="checkbox"/> Others (specify) _____
Location		
City _____ State/Province: _____ Country _____	Application or Project Type (Check all that apply) <input type="checkbox"/> Full-Scale <input type="checkbox"/> Field Demonstration <input type="checkbox"/> Bench-Scale Study <input type="checkbox"/> TSCA National Demonstration <input type="checkbox"/> TSCA Research and Development <input type="checkbox"/> CSCT Verification Program <input type="checkbox"/> EPA SITE Characterization and Monitoring Program <input type="checkbox"/> Research <input type="checkbox"/> Other (specify): _____	
Regulation/Statute/Organization (Check all that apply)		
<input type="checkbox"/> RCRA Corrective Action <input type="checkbox"/> CERCLA <input type="checkbox"/> TSCA <input type="checkbox"/> Safe Drinking Water Act <input type="checkbox"/> UST Corrective Action <input type="checkbox"/> State (specify) _____ <input type="checkbox"/> DOD <input type="checkbox"/> DOE <input type="checkbox"/> Other (Specify) _____ <input type="checkbox"/> Not Applicable	Media (Check all that apply) <input type="checkbox"/> Soil (in situ) <input type="checkbox"/> Soil (ex situ) <input type="checkbox"/> Sludge <input type="checkbox"/> Solid <input type="checkbox"/> Natural sediment (in situ) <input type="checkbox"/> Natural sediment (ex situ) <input type="checkbox"/> Air particulates and aerosols <input type="checkbox"/> Leachate (in situ) <input type="checkbox"/> Other <input type="checkbox"/> Aqueous sample (ex situ) <input type="checkbox"/> Ground water (in situ) <input type="checkbox"/> Soil gas <input type="checkbox"/> Air vapors <input type="checkbox"/> Dense nonaqueous phase liquids (DNAPL) [in situ] <input type="checkbox"/> Light nonaqueous phase liquids (LNAPL) [in situ] <input type="checkbox"/> Surface water (in situ)	
Equipment Scale (Check one only)		
No. of Measurements per day _____ Total No. of Measurements _____	<input type="checkbox"/> Mature <input type="checkbox"/> Pre-commercial	Project Status <input type="checkbox"/> Ongoing <input type="checkbox"/> Completed Month _____ Year _____

Vendor Name _____

Technology Type _____

PART 5: REPRESENTATIVE APPLICATIONS, CLIENT REFERENCES, AND PERFORMANCE DATA
(continued)

e. (continued)

- Note:**
- (1) List one specific contaminant per line. Do not list such entire contaminant groups as VOCs or solvents. TPH, which can be analyzed using a specific test method, can be listed as an individual contaminant.
 - (2) Indicate the sample matrix. Refer to question 2.14.
 - (3) Indicate the method detection limit. Indicate a range if the MDL can vary.
 - (4) The concentration range is the range of concentrations over which the technology was capable of operating for this project.
 - (5) Include all related costs necessary to set up, read, record, and compute measurement.

[illegible]

PART 6: LITERATURE AND TECHNICAL REFERENCES

- 6.1. List and attach available documentation (for example, journal articles, conference papers, patents) that best describes technology and vendor capabilities. References that contain performance and cost data are of particular interest. Do not include personal references. EPA reserves the right to add to the list other publicly available references.

Author(s) _____

Title _____

Journal/Conference _____

Date _____ NTIS/EPA Document Number(s) _____

Author(s) _____

Title _____

Journal/Conference _____

Date _____ NTIS/EPA Document Number(s) _____

Author(s) _____

Title _____

Journal/Conference _____

Date _____ NTIS/EPA Document Number(s) _____

Author(s) _____

Title _____

Journal/Conference _____

Date _____ NTIS/EPA Document Number(s) _____

Author(s) _____

Title _____

Journal/Conference _____

Date _____ NTIS/EPA Document Number(s) _____

Author(s) _____

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APPENDIX A
KEY TO CONTAMINANT GROUPS

CONTAMINANT GROUP CODES FOR HAZARDOUS SUBSTANCES LIST

Organic

- A** Halogenated volatiles
- B** Halogenated semivolatiles
- C** Nonhalogenated volatiles
- D** Nonhalogenated semivolatiles
- E** Organic pesticides/herbicides
- F** Dioxins/furans
- G** PCBs
- H** Polynuclear aromatics (PNAs)
- I** Solvents
- J** Benzene-toluene-ethylbenzene-xylene (BTEX)
- K** Organic cyanide
- L** Organic corrosives

Inorganic

- M** Heavy metals
- N** Nonmetallic toxic elements (As, F)
- O** Radioactive metals
- P** Asbestos
- Q** Inorganic cyanides
- R** Inorganic corrosives

Miscellaneous

- S** Explosives/propellants
- T** Organometallic pesticides/herbicides

HAZARDOUS SUBSTANCES

Organic Contaminant Group

CAS No.

208968	Acenaphthylene	D,H
83329	Acenaphthene	D,H
75070	Acetaldehyde	C
67641	Acetone	C,I
75058	Acetonitrile	C,K
98862	Acetophenone	D
591082	Acetyl-2-thiourea, 1	D
107028	Acrolein	C
79061	Acrylamide	D
79107	Acrylic acid	CL
107131	Acrylonitrile	C
124049	Adipic acid	L
116063	Aldicarb	E
309002	Aldrin	E
107186	Allyl alcohol	E
62533	Aniline	D,I,L
120127	Anthracene	D,H
1912249	Atrazine	E
2642719	Azinphos-ethyl	E
86500	Azinphos-methyl	E
151564	Aziridine	C
71432	Benzene	C,I,J
98884	Benzene carbonyl chloride	B
92875	Benzidine	D
205992	Benzofluoranthene,3,4-	H
65850	Benzoic acid	D,L
100470	Benzonitrile	C,I
95169	Benzothiazole,1,2-	D,I
50328	Benzo (a) pyrene	D,H
206440	Benzo (j,k) fluorene	H
207089	Benzo (k) fluoranthene	D,H
100447	Benzyl chloride	A
56553	Benz (a) anthracene	D,H
117817	Bis (2-ethyl hexyl) phthalate	D
111911	Bis (2-chloroethoxy) methane	B
111444	Bis (2-chloroethyl) ether	B
542881	Bis (chloromethyl) ether	B
75274	Bromodichloromethane	A
74964	Bromomethane	A
1689845	Bromoxynil	E
106990	Butadiene, 1,3-	C
71363	Butanol	C
85687	Butylbenzyl phthalate	D
94826	Butyric acid, 4-2(2,4-dichlorop)	C,L

CAS No.

133062	Captan	B
63252	Carbaryl	E
1563662	Carbofuran	E,F
75150	Carbon disulfide	C
56235	Carbon tetrachloride	A
78196	Carbophenothion	E
75876	Chloral	A
57749	Chlordane	E
106478	Chloroaniline, p-	B
108907	Chlorobenzene	A
67663	Chloroform	A
74873	Chloromethane	A
107302	Chloromethyl methyl ether	A
106898	Chloromethyloxirane, 2-	E
91587	Chloronaphthalene, 2-	B
95578	Chlorophenol, 2-	B
59507	Chloro-3-methylphenol, 4-	B
2921882	Chlorpyrifos	E
218019	Chrysene	D,H
56724	Coumaphos	E
8021394	Creosote	H
108394	Cresol, m-	D
106445	Cresol, p-	D
98828	Cumene	C,I
21725462	Cyanazine	E
110827	Cyclohexane	C,I
108941	Cyclohexanone	C
72548	DDD	E
72559	DDE	E
50293	DDT	E
78488	DEF	C,E
333415	Diazinon	E
132649	Dibenzofuran	D
53703	Dibenz (a,h) anthracene	D,H
124481	Dibromachloromethane	A
106934	Dibromoethane, 1,2-	A
96128	Dibromo-3-chloropropane, 1,2-	A
1918009	Dicamba	E
95501	Dichlorobenzene, 1,2-	B
541731	Dichlorobenzene, 1,3-	B
106467	Dichlorobenzene, 1,4-	B
91941	Dichlorobenzidine, 3,3-	B
75718	Dichlorodifluoromethane	A
75343	Dichloroethane, 1,1-	A

Organic Contaminant Group (continued)

CAS No.

107062	Dichloroethane, 1,2-	A
75354	Dichloroethene, 1,1-	A
156592	Dichloroethylene, cis-1,2-	A
156605	Dichloroethylene, trans-1,2-	A
120832	Dichlorophenol, 2,4-	B
94757	Dichlorophenoxyacetic acid, 2-	L
78875	Dichloropropane, 1,2-	A
542756	Dichloropropene, 1,3-	A
62737	Dichlorvos	E
115322	Dicofol	E
60571	Dieldrin	E
84662	Diethyl phthalate	D
111466	Diethylene glycol	D,I
1660942	Diisopropylmethylphosphonate	D
60515	Dimethoate	E
119904	Dimethoxybenzidine, 3,3-	D
105679	Dimethyl phenol, 2,4-	D
13113	Dimethyl phthalate	D
77781	Dimethyl sulfate	C
99650	Dinitrobenzene, 1,3-	D
51285	Dinitrophenol, 2,4-	D
121142	Dinitrotoluene, 2,4-	D
606202	Dinitrotoluene, 2,6-	D
88857	Dinoseb	E
123911	Dioxane, 1,4	C
78342	Dioxathion	E
122667	Diphenylhydrazine, 1,2-	D,H
85007	Diquat	E
298044	Disulfoton	C,E
330541	Diuron	E
84742	Di-n-butyl phthalate	D
117840	Di-n-octyl phthalate	D
115297	Endosulfan	E
959988	Endosulfan	I
33212659	Endosulfan II	E
1031078	Endosulfan sulfate	E
145733	Endothall	E
72208	Endrin	E
7421934	Endrin aldehyde	E
563122	Ethion	E
141786	Ethyl acetate	C
100414	Ethyl benzene	C,J
75003	Ethyl chloride	A,I
60297	Ethyl ether	C
107211	Ethylene glycol	I
110805	Ethylene glycol monoethyl ether	C,I
759944	Ethylpropylthio carbamate, S-	E

CAS No.

122145	Fenitrothion	E
86737	Fluorene	D,H
50000	Formaldehyde	C
64186	Formic acid	L
110009	Furan	F
98011	Furfural	I,C
765344	Glycidyaldehyde	G
76448	Heptachlor	E
1024573	Heptachlor epoxide	E
118741	Hexachlorobenzene	B
87683	Hexachlorobutadiene	B
60873	Hexachlorocyclohexane, alpha-	E
60873	Hexachlorocyclohexane, beta-	E
60873	Hexachlorocyclohexane, delta-	E
77474	Hexachlorocyclopentadiene	B
67721	Hexachloroethane	B
70304	Hexachlorophene	B
110543	Hexane	C,I
1689834	Ioxynil	E
78831	Isobutanol	C
78591	Isophorone	D
143500	Kepone	E
58899	Lindane	E
121755	Malathion	C,E
108316	Maleic anhydride	E
123331	Maleric hydrazide	E
126987	Methacrylonitrile	C
67561	Methanol	C
16752775	Methomyl	E
72435	Methoxychlor	E
79221	Methyl chlorocarbonate	L
78933	Methyl ethyl ketone	C
108101	Methyl isobutyl ketone	C,I
80626	Methyl methacrylate	C
101144	Methylene bis (2-chloroaniline)	B
75092	Methylene chloride	A
23855	Mirex	E
91203	Naphthalene	D,H
100016	Nitroaniline, p-	D
98953	Nitrobenzene	D
100027	Nitrophenol, 4-	D

Organic Contaminant Group (continued)

<u>CAS No.</u>			<u>CAS No.</u>		
1116547	Nitrosodiethanolamine, n-	D	746016	TCDD	F
55185	Nitrosodiethylamine, n-	D	95943	Tetrachlorobenzene, 1,2,4,5-	B
62759	Nitrosodimethylamine, n-	D	630206	Tetrachloroethane, 1,1,1,2-	A,E,I
86306	Nitrosodiphenylamine, n-	D	79345	Tetrachloroethane, 1,1,2,2-	A
930552	Nitrosopyrrolidine, n-	D	127184	Tetrachloroethene	A
924163	Nitroso-di-n-butylamine, n-	D	58902	Tetrachlorophenol, 2,3,4,6	B
615532	Nitroso-di-n-methylurethane, n-	D	3689245	Tetraethyldithiopyrophosphate	E
99990	Nitrotoluene, 4-	D	109999	Tetrahydrofuran	F,I
56382	Parathion, ethyl-	E	137268	Thiram	E
298000	Parathion, methyl-	E	108883	Toluene	C,J
1336363	PCBs	G	584849	Toluene diisocyanate	D
608935	Pentachlorobenzene	B	8001352	Toxaphene	E
76017	Pentachloroethane	B	93721	TP, 2,4,5-	E
82688	Pentachloronitrobenzene	B	75252	Tribromomethane	A
87865	Pentachlorophenol	B	120821	Trichlorobenzene, 1,2,4-	B
85018	Phenanthrene	D,H	71556	Trichloroethane, 1,1,1-	A
108952	Phenol	D	79005	Trichloroethane, 1,1,2-	A
139662	Phenyl sulfide	D	79016	Trichloroethylene	A
62384	Phenylmercuric acetate	E	75694	Trichlorofluoromethane	A
298022	Phorate	C,E	933788	Trichlorophenol, 2,3,5-	B
75445	Phosgene	E	95954	Trichlorophenol, 2,4,5-	B
13171216	Phosphamidon	E	88062	Trichlorophenol, 2,4,6-	B
7803512	Phosphine	E	609198	Trichlorophenol, 3,4,5-	B
85449	Phthalic anhydride	D,E	93765	Trichlorophenoxyacetic acid, 2-	L
23950585	Pronamide	D	933788	Trichloro-1,2,2-trifluoroethane	A,I
129000	Pyrene	D,H	27323417	Triethanolamine	E
110861	Pyridine	C,I	126727	Tris (2,3-dibromopropyl) phosphate ..	B
91225	Quinoline	D,H	108054	Vinyl acetate	C
108463	Resorcinol	D	75014	Vinyl chloride	A
299843	Ronnel	E	81812	Warfarin	E
57249	Strychnine	E,H	108383	Xylene, m-	C,J
100425	Styrene	C	95476	Xylene, o-	C,J
			106423	Xylene, p-	C,J

Inorganic Contaminant Group

CAS No.

7429905	Aluminum	M
20859738	Aluminum phosphide	M
7440360	Antimony	M
7440382	Arsenic	M
1327533	Arsenic trioxide	M
1303339	Arsenic trisulfide	M
7440393	Barium	M
542621	Barium cyanide	M,Q
7440417	Beryllium	M
7440439	Cadmium	M
13765190	Calcium chromate	M
7778543	Calcium hypochlorite	M
1333820	Chromic acid	M,R
7440473	Chromium	M
	Chromium (III)	M
	Chromium (VI)	M
7440484	Cobalt	M
7440508	Copper	M
544923	Copper cyanide	M,Q
7720787	Ferrous sulfate	M
7439896	Iron	M
7439921	Lead	M
7439965	Manganese	M
7439976	Mercury	M
7440020	Nickel	M
7718549	Nickel chloride	M
10102440	Nitrogen dioxide	R
7789006	Potassium chromate	M
151508	Potassium cyanide	M,Q
506616	Potassium silver cyanide	M,Q
7783008	Selenious acid	M,R
7782492	Selenium	M
7440224	Silver	M
506649	Silver cyanide	M,Q
7440235	Sodium	M
26628228	Sodium azide	M
7681494	Sodium fluoride	M
7775113	Sodium chromate	M

CAS No.

143339	Sodium cyanide	M,Q
1310732	Sodium hydroxide	M,R
7440280	Thallium	M
1314325	Thallic oxide	M
563688	Thallium acetate	M
6533739	Thallium carbonate	M
7791120	Thallium chloride	M
10102451	Thallium nitrate	M
12039520	Thallium selenide	M
7446186	Thallium (I) sulfate	M
7440291	Thorium	M
1314621	Vanadium pentoxide	M
7440666	Zinc	M
557211	Zinc cyanide	M,Q
1314847	Zinc phosphide	M
7733020	Zinc sulfate	M

Explosive/Propellants

CAS No.

7664417	Ammonia	S
131748	Ammonium picrate	S
7773060	Ammonium sulfamate	S
460195	Cyanogen	S
2691410	Cyclotetramethylenetetranitramine ...	S
302012	Hydrazine	S
55630	Nitroglycerine	S
99990	Nitrotoluene, 4-	S
26628228	Sodium azide	M,S
99354	Trinitrobenzene, 1,3,5	S
118967	Trinitrotoluene	S

Organometallic Compound

CAS No.

630104	Selenourea	U
78002	Tetraethyl lead	U